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## PATENT SPECIFICATION



133/3 Convention Date (France): July 27, 1932.

412,052

Application Date (In United Kingdom): July 27, 1933. No. 21,182/33.

Complete Accepted: June 21, 1934.

## COMPLETE SPECIFICATION.

## Machine for Sorting, Classifying and Counting Discs, Counters or the like, and more particularly Applicable to Coins of Money.

I, LOUIS JOSEPH HENRI BOISTEUX, of 56, avenue de Valenton, Villeneuve Saint-Georges (Seine et Oise), France, a French citizen, do hereby declare the nature of 5 this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

10 The present invention relates to a machine for sorting, classifying and counting discs, counters or the like and particularly coins of money, having a rotatable inclined sorting plate provided with openings for the reception of the discs, coins or the like individually, which openings are moved over sorting openings of increasing height provided in a plate arranged beneath the sorting plate. 15 According to the invention, an improved machine of the above kind is characterised in that a feeding plate, keyed on to the shaft of a sorting plate and having openings or holes for the coins or the like, is provided, which feeding plate rotates with the said sorting plate, receives the coins or the like from a container, and delivers them individually to a stationary pocket associated with the said sorting plate. 20 A level buffer or abutment is preferably provided to prevent any deformed or bent coins being accepted which would otherwise pass through a window not corresponding to their normal dimensions. 25 A feature of the invention is the use of jointed fingers mounted on a movable frame, each finger pertaining to a window of the movable sorting member, tending to be pushed back by a spring, but owing to a stationary cam placed along the trajectory of the sorting apertures, each finger successively takes up the desired positions to retain the coin in an opening, to push the coin when it is able to pass through a window, then to actuate the 30 counting device pertaining to this coin and to return to a neutral position. 35

40 Channels conduct the ejected coins into the classifying compartments and if any coins of the same value should be of 45 different size, the corresponding channels will be able to divert them into the same compartment.

50 Any suitable form of rotatable plates,  
[Price 1/-]

both for feeding and for sorting, can be utilised, but circular plates are those most adaptable for easy working and present the least possible danger of clogging. 55

In this manner of carrying out the invention the two rotatable plates, keyed on the same shaft, will be actuated by means of a crank with the desired connections of gears. An electric motor or clockwork spring could also be used together with any known form of friction clutch adapted to operate in the case of a jam in the machine. 60

The whole will be preferably enclosed in a cover in the form of a box or case, either bolted down or not, easily removable in order to give access to the mechanism, with windows to allow for the indications of the counting device to be read, the markings of which can be made according to the number of coins or according to the value of the sum they represent, and a collective totalling counting device can be provided. 70

I am aware that a coin sorting machine is known wherein a rotating feeding plate keyed on to the shaft of a sorting plate and having openings or holes for the coins, delivers coins received from a container, one at a time to pockets in the sorting plate, said sorting plate co-operating with a stationary sorting member having apertures of varying height, but in this known construction the coins drop directly from the opening of the feeding plate through a stationary conduit into a corresponding opening or pocket of the sorting plate, whereas according to my invention the coins dropping from the feeding plate move into a stationary pocket and then move from the stationary pocket gradually into the sorting plate, whereby any possibility of jamming is eliminated. 80

The accompanying drawings show by way of example a machine according to the present invention, with the feeding and sorting members in the form of rotatable circular plates. 85

Fig. 1 is a diagrammatic sectional side view of the machine. 90

Fig. 2 shows a part of a plan view of the feeding plate. 105

Fig. 3 shows a partial plan view of the sorting plate.

Fig. 4 is a plan view of the classification crown.

5 Fig. 5 is a plan view of the cam crown.

Fig. 5a is a section on the line AB of Fig. 5.

10 Fig. 6 is a detail view of a finger in position raised by the cam.

10 Fig. 7 shows a finger lowered and free.

Fig. 8 shows the finger pressing against a coin.

15 Fig. 9 shows the finger ejecting a coin and actuating the counter.

15 As will be seen from Fig. 1, the machine has a shaft 1 which is set in rotation by means of a bevel gear wheel 2 controlled by another wheel 3 actuated by the driving shaft with a crank (not represented) or by an electric motor (also not represented). The shaft 1 is supported by bearings 4 and 5, affixed to the frame of the machine (not shown on the drawings).

20 25 A feeding plate 6 is keyed on the shaft 1 and revolves with it in the direction of arrow 35 moving frictionally upon the stationary plate 7, which forms an incomplete undersurface, and only in conjunction with the lower part of the plate 6, and on which is a container 8, into which the coins for classification are placed in bulk. The plate 6 has openings such as 9, and the coins are diverted one at a time 30 35 (10) into each opening 9. As soon as each opening 9 becomes free of the undersurface 7 at a certain height, the coin tips as indicated at 10, and drops as shown at 10, into a pocket 11, mounted on a 40 stationary crown 12 and formed rigid with the frame of the machine.

45 The feeding plate thus serves as an intermediary and allows the coins to be placed in bulk in the container 8, while these coins are never more than in a limited number on the sorting plate 13. This plate is keyed on the shaft 1 and turns with it in the direction of the arrow 35 moving frictionally upon the bottom 50 55 12 which is in the form of a crown. The sorting plate 13 has openings 14 of a suitable number according to the openings 9 of the feeding plate 6 so that the coins dropping after the manner of the coin 10, find their way from the pocket 11 into an opening 14 as for example 10, and are carried by the plate 13 to a long circular window 14' of the crown 12.

60 The coin 10, which at a given moment of its course is moved upwards again, is held by a finger 20, the working of which is explained later. It arrives, as indicated at 10, (Fig. 4) in front of the opening of the window 14' which is composed 65 of a series of graduations, widening out successively. Each dimension of this window corresponds therefore to one of the increasing diameters of the coins, which the plate 13 carries along 14'. A moment arrives when the coin 10, (Fig. 4) is like 10, in front of a part of 14' of which the height corresponds to its diameter. The finger 20, which continues its pressure therefore pushes the coin 10, through 14' and it falls as indicated at 10, (Fig. 1) into a channel 15 which leads into a collecting container 16 corresponding to the type of coin ejected from the respective section of 14'.

70 75 80 85 90 95 100 The stationary crown 12 is fixed on the frame. A circular piece in two parts 17 and 17' serves to guide the sorting plate 13 and holds it against the crown 12. This latter can be easily replaced in case, for example, it should be necessary to adapt the machine to a monetary system different from that for which it was originally intended. At a point in the course of rotation of the plate 13, before the finger 20 could come into action, a spring blade 18 fixed on the crown 12 by a stay or bracket 19 scrapes the surface of the plate 13 in such a manner that any bent or deformed coins are eliminated and prevented from passing 14', in view of the fact that, on account of their deformation, their diameter is abnormal and they would otherwise pass into a part of 14' which would not correspond to their series, and which would render the classification incorrect.

105 110 115 120 125 130 The working of the fingers 20 in conjunction with a crown cam 27 is now given here.

The crown cam is in two parts: a high part 27', which is joined by ramps 33 and 34 with a low part 27''. This latter is provided with recesses 32 and in the solid portions has a ratchet wheel 31 on a pivot 30, which controls a small counter for coins or the like (not shown on the drawings). There are as many counters of this kind as there are sections in 14' viz.: as there are dimensions of coins to classify.

The cam 27 is fixed to the frame by means of series of studs 28 and is positioned between the plates 6 and 13. Its purpose is to control the possible positions of the finger 20. There are as many fingers of this type as there are openings 14. The support 21 of each finger 20 is fixed to a movable plate in a manner to co-operate with the opening 14 corresponding to it.

In Figs. 6 to 9, the support 21 is mounted on the lower side of the plate 6 and the finger 20 pivots on an axle 22 fixed to the elbow 23 obtained by means of a twist to the support 21. A stationary arm 24 serves as a connection for a spring

25 fixed to finger 20 and which tends to urge it downward. Another arm terminating in a trigger 26 is integral with the finger 20 which it follows in all its movements. The trigger 26 can, in certain cases, rest on the ring cam 27, or be below or be above it.

When the finger is in position opposite the high part 27<sup>1</sup> of the ring cam 27, the trigger 26 presses on 27<sup>1</sup> lifting the finger 20 and compressing the spring 25 (Fig. 6). Now the support of the finger follows the rotating movement of the plates in the direction of the arrow 35 in front of the members 12 and 27<sup>1</sup>, which are stationary; the trigger 26 which moves upon 27<sup>1</sup>, thereby comes to the descending ramp 34 and if nothing stops the finger 20, this, under the action of the spring 25, will pass across the free opening 14 and the window 14<sup>1</sup>, while the trigger 26 is in a free space, under the part 27<sup>11</sup> (Fig. 7); having arrived at 33, it again mounts the said ramp and presses upon 27<sup>1</sup>.

If a coin 10, occupies the opening 14, when the trigger 26 descends the ramp 34, the finger 20 lowers itself, but the movement is stopped, when the finger 20 presses against the coin 10. (Fig. 8) and remains thus as long as the coin cannot pass 14<sup>1</sup>. The trigger 26 is therefore sufficiently above 27<sup>11</sup> so that it cannot act upon the various ratchet wheels 31 in front of which it is passing.

When the coin as shown in the case of 10. (Fig. 4) arrives at a part of 14<sup>1</sup>, where it can pass, the finger 20 presses it according to the arrow 29 (Fig. 8) and sends it as indicated for 10. (Fig. 9). This pressure is stopped, when the turn comes for the trigger 26 to press on 27<sup>11</sup> (Fig. 9) in such manner that it acts upon the first ratchet that it meets, which is just that which is concerned with the counting of the coins which are ejected like 10. After having set the ratchet in action, the trigger arrives in front of the recess 32, which appears after each ratchet, the trigger 26 no longer being held up, liberates the finger 20 driven by the spring 25 and all reverts to the former position as in Fig. 7.

It is understood that the number of graduations to the window 14<sup>1</sup>, the number of fingers 20, of counters with ratchet 31, of recesses 32, will depend on the kinds of coins to be classified and they can be any number desired: it will suffice to arrange the diameter of the plates and stationary crowns accordingly.

The feeding and sorting members could be constructed in other forms without departing from the scope of the invention.

Having now particularly described and ascertained the nature of my said inven-

tion and in what manner the same is to be performed, I declare that what I claim is:—

1. A machine for sorting, classifying and counting discs, counters or the like and particularly coins of money, having a rotatable inclined sorting plate provided with openings for the reception of the discs, coins or the like individually, which openings are moved over sorting openings of increasing height provided in a plate arranged beneath the sorting plate, characterised in that a feeding plate (6), keyed on to the shaft of a sorting plate (13) and having openings or holes for the coins or the like, is provided, which feeding plate rotates with the said sorting plate, receives the coins or the like from a container (8), and delivers them individually to a stationary pocket (11) associated with the said sorting plate (13). 70 75 80 85

2. A machine for sorting, classifying and counting discs, counters or the like and particularly coins of money, according to claim 1, characterised by the provision of spring urged fingers (20) which are fixed on the feeding plate opposite to the openings (14) of the sorting plate (13) and are adapted to be lifted away from the sorting plate by means of triggers (26) connected with the said fingers and sliding on a stationary guide member, after passing a sorting opening (14<sup>1</sup>) and, when the said triggers arrive at a lower part (27<sup>11</sup>) provided on the guide member, are pressed by the springs (25) against the coins or the like in the oppositely located openings (14), so that when the coins or the like arrive at a part of the opening (14<sup>1</sup>) which is of a breadth corresponding to their diameter, they are pushed by the said fingers into a channel (15) leading to a collecting chamber (16). 90 95 100 105

3. An apparatus for sorting, classifying and counting discs, counters or the like and particularly coins of money, according to claim 2, characterised in that the triggers (26) operate counting devices when the discharge of the coins or the like located beneath the fingers (20) associated with the said triggers takes place. 110 115

4. An apparatus for sorting, classifying and counting discs, counters or the like and particularly coins of money, according to any of the preceding claims, characterised in that it is provided with a level buffer or abutment co-operating with the sorting plate for eliminating any deformed or bent coins or the like from the following sorting operation. 120 125

5. An apparatus for sorting, classifying and counting discs, counters or the like and particularly coins of money, according to any of the preceding claims, characterised in that the common shaft of 130

the sorting plate and of the feeding plate is driven by means of crank-operated gears.

6. A machine for sorting, classifying and counting discs, counters or the like, and particularly coins of money, according to claim 5, characterised in that the said shaft is driven by the gears through a friction coupling from an electric motor 10 or from a clockwork spring.

7. The machine for sorting, classifying and counting discs, counters or the like, and particularly coins of money, substantially as described with reference to the accompanying drawings.

Dated the 26th day of July, 1933.

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Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1934.

BB 0412052  
JUN 1934

6B-1934-06

SHEET

Fig. 1

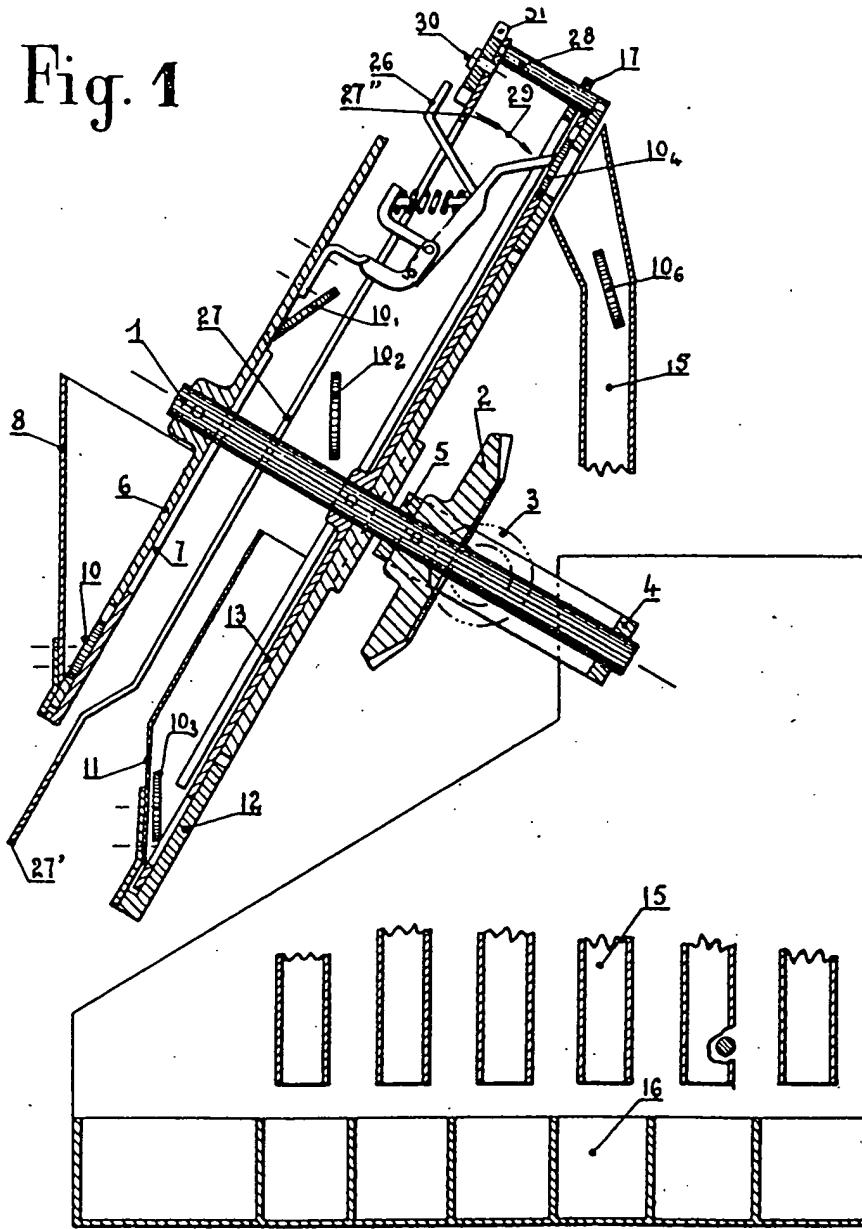
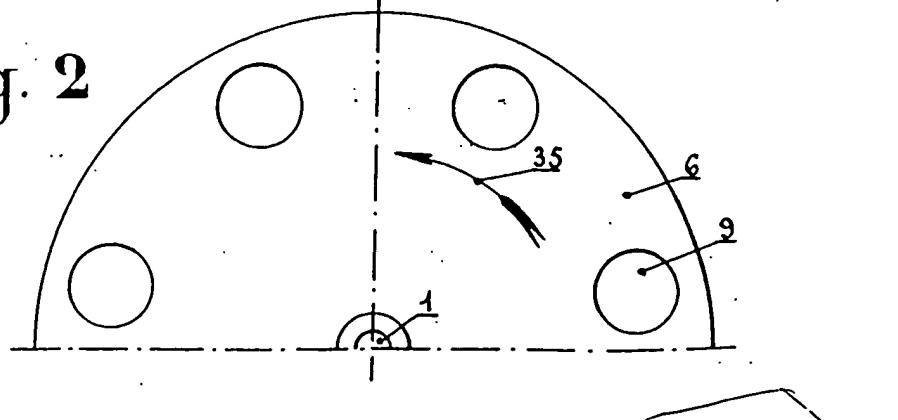
*[This Drawing is a reproduction of the Original on a reduced scale.]*

Fig. 2



1453/13

133/8

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4 SHEETS  
SHEET 2

Fig. 3

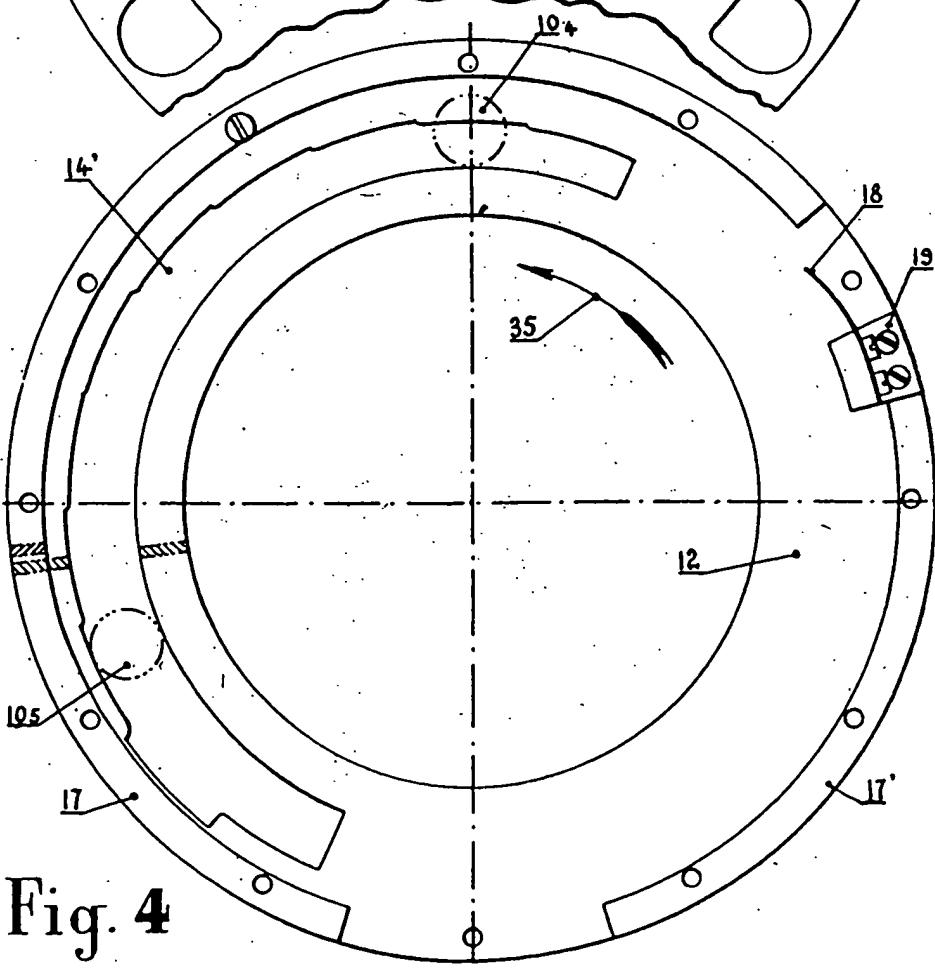
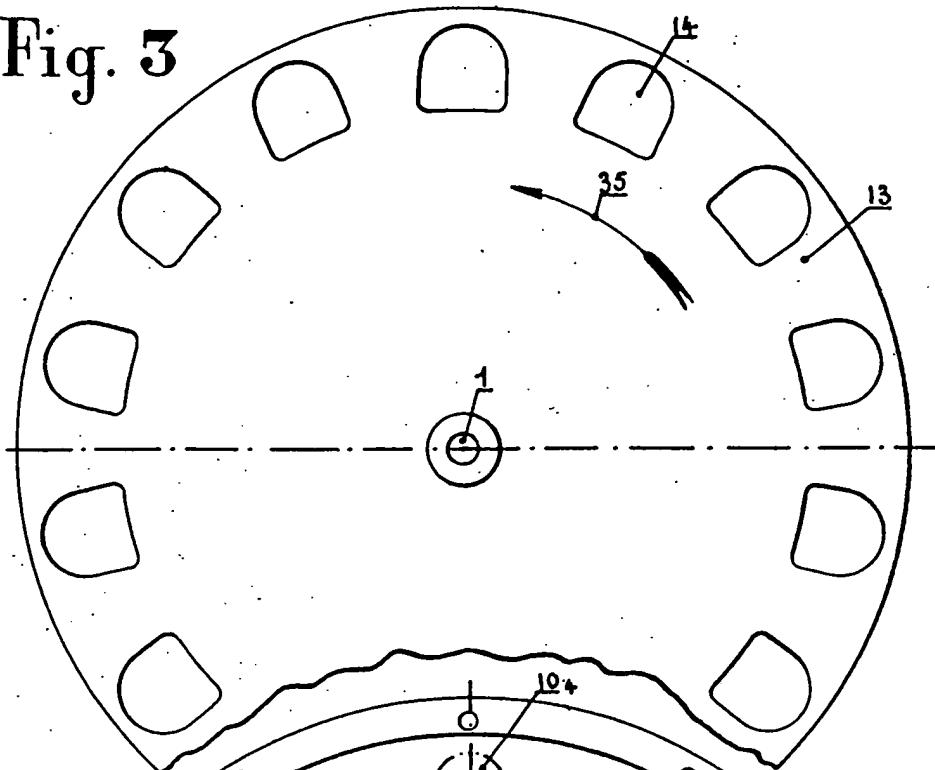


Fig. 4

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412,052 COMPLETE SPECIFICATION

57

[This Drawing is a reproduction of the Original on a reduced scale.]

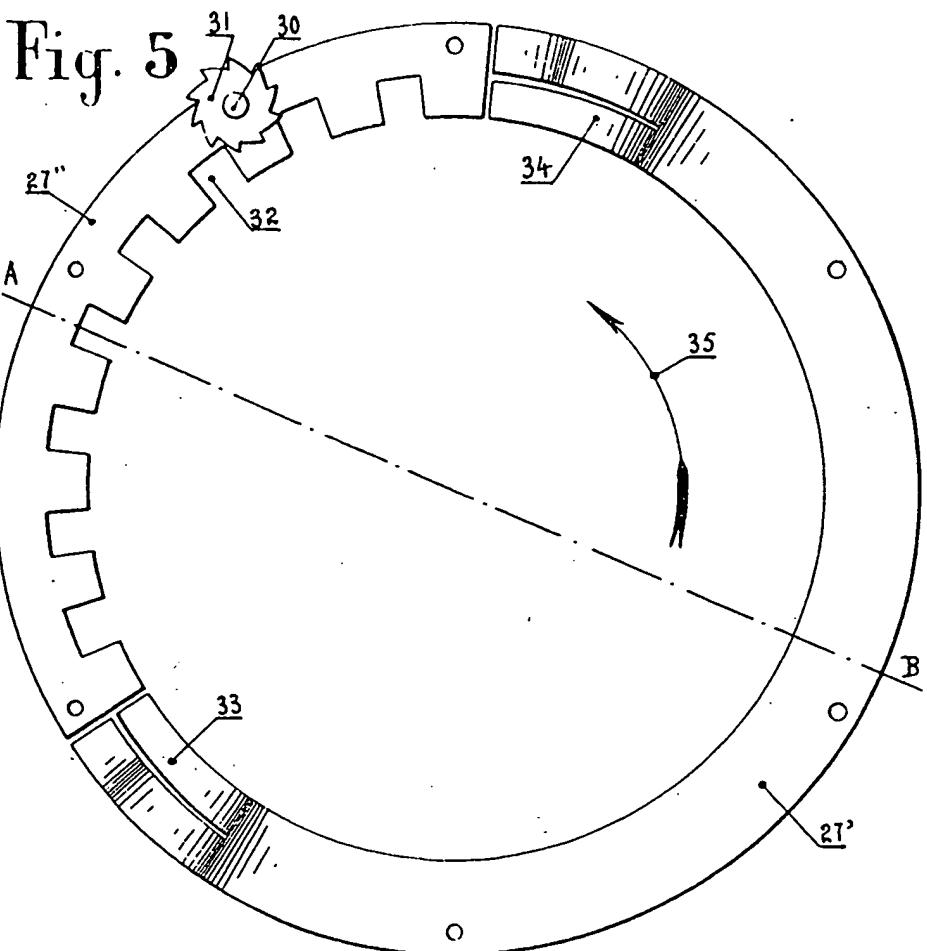


Fig. 5<sup>a</sup>

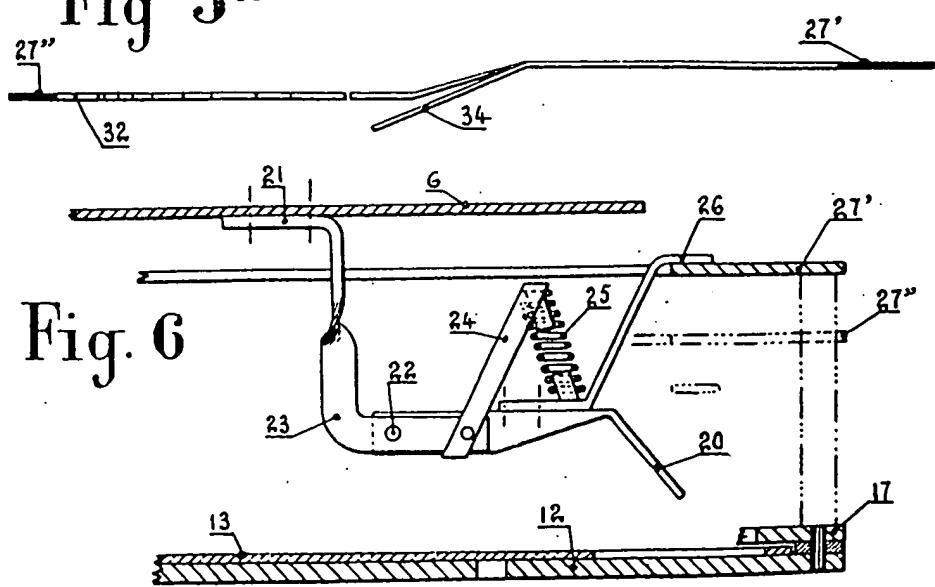


Fig. 6

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Fig. 7

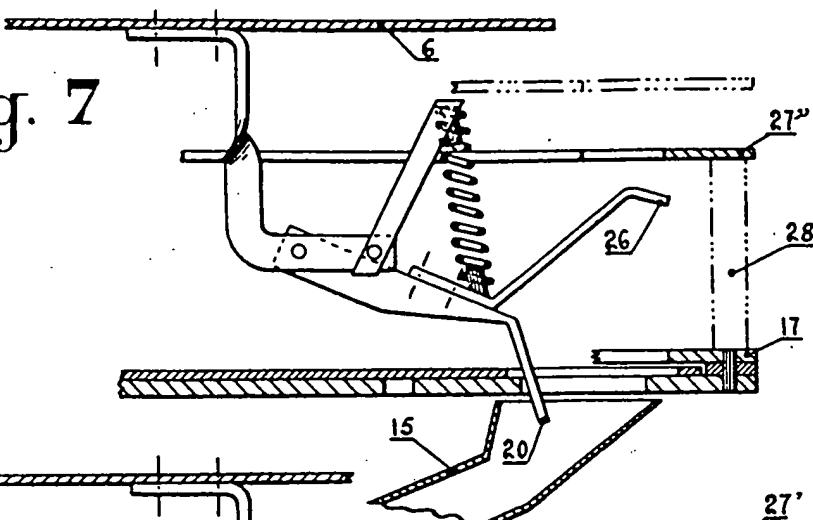


Fig. 8

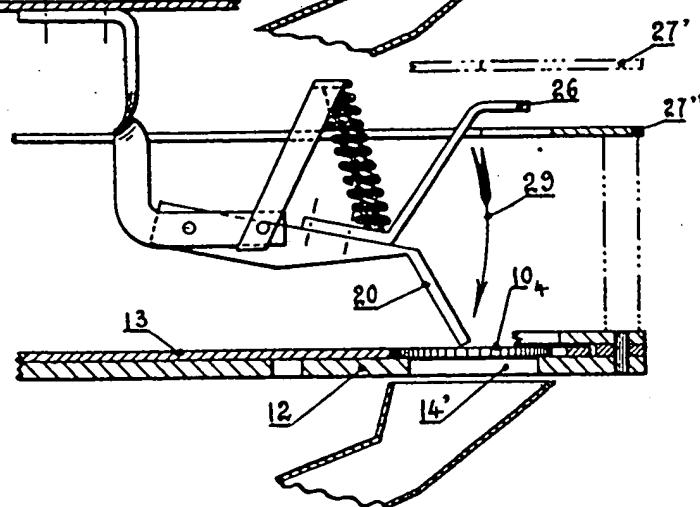


Fig. 9

